CLAIMS

WHAT IS CLAIMED IS:

1. A method of controlling an active noise control system, comprising:

determining an ideal model of a physical path of the active noise control system, wherein the ideal model overestimates an actual response of the physical path;

generating an actual response using the ideal model;

calculating a difference between an ideal response and the actual response to obtain an error signal;

adjusting the ideal model based on the error signal.

2. The method of claim 1, wherein the overestimate in the ideal model causes the error signal to always be a positive value.

3. The method of claim 1, wherein the adjusting step adjusts the ideal model toward the actual response to reduce the error signal.

4. The method of claim 1, further comprising controlling a rate at which the adjusting step is conducted according to a conversion factor.

5. The method of claim1, wherein the overestimate in the physical path is obtained by a predictive model.

6. The method of claim 1, wherein the overestimate in the physical path is obtained by incorporating a higher order characteristic in the filter update equation during the adjusting step.

7. A method of controlling an active noise control system, comprising:

defining a first gain in a physical path and a second gain in a spectral shaping path;

normalizing the second gain based on a system output value;

generating an actual response using an ideal model and the normalized second gain;

calculating a difference between an ideal response and the actual response to obtain an error signal;

adjusting the system model based on the error signal.

8. The method of claim 7, wherein the system output value is the actual response.

9. The method of claim 8, wherein the second gain is calculated by dividing an ideal gain by a value based on the actual response.

10. The method of claim 9, wherein the ideal gain is equal to the first gain.

11. The method of claim 8, wherein the second gain is calculated by dividing an ideal gain by a value based on the actual response and the ideal gain.

12. The method of claim 11, wherein the ideal gain is equal to the first gain.

13. The method of claim 7, wherein the system output value is the ideal response.

14. The method of claim 13, wherein the second gain is calculated by dividing an ideal gain by a value based on the ideal response.

15. An active noise control system, comprising:

a sound generator that outputs a generated sound based on an engine operating characteristic;

a physical path through which the generated sound travels, the physical path having a first gain;

a spectral shaping path having an ideal model of the physical path and a second gain, wherein the generated sound is controlled by the ideal model and the second gain to generate an actual response;

a controller that calculates a difference between an ideal response of the active noise control system and the actual response to obtain an error signal and adjusts the system model based on the error signal.

16. The system of claim 15, wherein the ideal model initially overestimates the actual response.

17. The system of claim 15, further comprising a spectral shaping subsystem that normalizes the second gain based on a system output value, wherein the actual response is generated using the ideal model and the normalized second gain.

18. The system of claim 17, wherein the system output value is the actual response.

19. The system of claim 18, wherein the second gain is calculated by dividing the first gain by a value based on the actual response.

20. The system of claim 18, wherein the second gain is calculated by dividing the first gain by a value based on the actual response and the first gain.

21. The system of claim 17, wherein the system output value is the ideal response, and wherein the second gain is calculated by dividing an ideal gain by a value based on the ideal response.